

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

1. (4x Amended) A method suitable for facilitating disease diagnosis, the method comprising the steps of:

exposing cells of a patient, suspected of having a disease for which chromosome damage is diagnostic, to a chromosome damaging agent selected to damage chromosomes within the nuclei of the cells to produce chromosome fragments having broken ends;

marking at least some of the broken ends, wherein said marking step includes adding dNTP to at least a portion of the broken ends and exposing the broken ends to fluoresceinated material; and

analyzing the marked broken ends within interphase cell nuclei to determine whether the cells were affected by the disease, wherein said analyzing includes comparing information obtained from cells of a patient suspected of having a disease to information obtained from cells of suspected healthy patients.

11. (4x Amended) A method for analyzing an effect of disease on cells, the method comprising the steps of:

preparing cells suspected of being affected by a disease for which chromosome damage is diagnostic by exposing the cells to a chromosome breakage agent to form chromosome pieces having ends within nuclei of the cells;

marking at least a portion of the ends within interphase nuclei with dNTP;

counting a number of marked ends to analyze the effect of the disease on cells;

and

comparing said number of marked ends to information obtained from a control group.

16. (4x Amended) A method suitable for facilitating diagnosis of Alzheimer's disease, the method comprising the steps of:

exposing cells thought to be affected by Alzheimer's disease to a chromosome  
damaging agent;

exposing the cells thought to be affected by Alzheimer's disease to a chromosome  
breakage agent to form chromosome pieces having ends;

marking at least some of the ends within interphase nuclei with dNTP;

measuring an amount of marked chromosome ends; and

comparing a number of marked chromosome ends present in the cells thought to  
be affected by Alzheimer's disease to information relating to a control group.